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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,897	05/17/2006	Joo-Ho Kim	0001.1059	5791

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STEIN MCEWEN, LLP
1400 EYE STREET, NW
SUITE 300
WASHINGTON, DC 20005

EXAMINER	
JOHNSON, CONNIE P	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
07/21/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptomail@smiplaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/531,897	KIM ET AL.	
	Examiner	Art Unit	
	CONNIE P. JOHNSON	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The remarks and amendment filed 5/8/2009 have been entered and fully considered.

2. Claims 1-26 are presented.

3. Claims 3 and 14 are amended.

4. The 112, 2nd paragraph rejection is withdrawn.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3, 9-15, 20-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamasaki et al., U.S. Patent Publication No. 2003/0143407 A1.

Yamasaki teaches a thermal-sensitive composition comprising a

- Support comprising thermal resistant material, such as aluminum and polypropylene (page 31, [0352]),
- a surface layer of the substrate (page 18, [0185]),
- a hydrophilic layer and a
- thin layers formed between the hydrophilic layer and thermal-sensitive layer and between the surface substrate layer and the substrate (page 18, [page 18, [0185]).
- an underlayer formed just under the thermal-sensitive layer (page 26, [0282]).
- photosensitive or thermal-sensitive image-forming layer (page 13, [0129]),
- an overcoat layer comprising light to heat conversion material (page 26, [0282]).

The light to heat conversion material comprises Ag, Sb, Te and Ge as in claim 3 (page 26, [0276-0277]). Yamasaki does not specifically teach that the light to heat converting material is in a layer directly above and below the thermal-sensitive layer. However, it would have been obvious to one of ordinary skill in the art that the light to heat conversion material could be in the underlayer and overcoat layer because Yamasaki teaches that the light to heat conversion material may be in any position of the thermal-sensitive composition (page 28, [0318]). Further, Yamasaki teaches the light to heat conversion material in the overcoat layer to improve sensitivity (page 29, [0334]). The thermal-sensitive layer comprises positive or negative-sensitive composition (page

14, [0142 and 0145]). The recitation in claim 2, "wherein the first and second light to heat converting layers absorb a first activation light radiated thereon and convert the absorbed activation light into heat", is a process limitation and does not add positive recitation to the claim.

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (MPEP 2113).

Yamasaki also teaches a method of forming the thermal-sensitive composition wherein the composition is exposed to light and the non-exposed region of the thermal-sensitive layer is removed thereby forming a pattern (page 3, [0032]). The recitation in claim 22, "wherein the thermal sensitive material layer changes properties due to heating or activation light irradiation, allowing a pattern to appear through a development process," also in claim 23 "wherein at least two surfaces of the thermal sensitive material layer are heated, enabling a high aspect ratio pattern to be formed" and claim 26, "wherein the photo and thermal sensitive layer is subjected to activation light irradiation, forming a fine pattern..." are process limitations and therefore have no patentable weight in the product claim. The underlayer and overcoat layers comprise light to heat converting material and are imagewise exposed to laser light, therefore the thermal-sensitive layer undergoes property changes due to heating or activation light.

Yamasaki does not specifically teach protective layers between each of the layers throughout the thermal-sensitive composition. However, it would have been obvious to have protective layers between the second light to heat converting layer and the thermal-sensitive layer, a protective layer between the first light to heat converting layer and the thermal-sensitive layer and a protective layer between the substrate and the surface substrate layer because Yamasaki teaches undercoat layers, intermediate layers (page 4, [0038]) and thin film layers between the substrate and substrate surface layer which are representative of protective layers.

7. Claims 1, 4-8, 16, 18-19 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamasaki et al., U.S. Patent Publication No. 2003/0143407 A1 in view of Takeda et al., U.S. Patent no. 5,858,604.

Yamasaki teaches a thermal-sensitive composition comprising a support, a surface layer of the substrate (page 18, [0185]), a hydrophilic layer, thin layers formed between the hydrophilic layer and thermal-sensitive layer and between the surface substrate layer and the substrate (page 18, [page 18, [0185]), an underlayer formed just under the thermal-sensitive layer (page 26, [0282]), photo/thermal-sensitive layer (page 13, [0129]) and an overcoat layer comprising light to heat conversion material (page 26, [0282]) as relied upon above. Yamasaki teaches exposing the composition to one wavelength to form a pattern. However, Yamasaki does not teach exposing the composition to a second wavelength.

Takeda, in analogous art teaches a photosensitive composition comprising a support, photosensitive layer, a light-shielding layer and a light to heat converting layer.

The method of making the composition comprises forming the composition on the substrate, exposing the composition to the first wavelength and then to a second wavelength through removed portions to cause change in solubility of the photosensitive layer in a developer as in claim 16 (col. 4, lines 40-67). Takeda also teaches negative and positive-working compositions (col. 37, line 36). It would have been obvious to one of ordinary skill in the art to modify the method of Yamasaki with a second exposure step as in Takeda to chemically react and cause a change in solubility of the thermal-sensitive layer in a developer solution to remove unexposed portions as taught by Takeda (col. 4, lines 40-67).

8. Claims 16, 17 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamasaki et al., U.S. Patent Publication No. 2003/0143407 A1 in view of in view of Takeda et al., U.S. Patent no. 5,858,604 and further in view of Kouchiyama et al., Storage Technology Laboratories.

Yamasaki teaches a thermal-sensitive composition comprising a support, a surface layer of the substrate (page 18, [0185]), a hydrophilic layer, thin layers formed between the hydrophilic layer and thermal-sensitive layer and between the surface substrate layer and the substrate (page 18, [page 18, [0185]), an underlayer formed just under the thermal-sensitive layer (page 26, [0282]), photo/thermal-sensitive layer (page 13, [0129]) and an overcoat layer comprising light to heat conversion material (page 26, [0282]) as relied upon above. Yamasaki teaches exposing the composition to one wavelength to form a pattern. The thermal-sensitive layer comprises a positive or

negative-working composition (page 14, [0142 and 0145]). However, Yamasaki does not teach exposing the composition to blue laser light.

However, Kouchiyama teaches a method comprising exposing a photoresist composition with blue light at wavelengths of 405 to 680nm with numerical aperatures of 0.55 to 0.95 (page 769, paragraphs 2-4). Yamasaki in view of Takeda teaches exposing the negative or positive-working composition to actinic radiation at wavelengths of less than 500nm to form patterns, which is representative of the absorption spectra of blue laser light. Therefore, it would have been obvious to one of ordinary skill in the art to use the blue laser of Kouchiyama as the second exposure light in the method of Yamasaki because Kouchiyama teaches multiple exposures of an inorganic thermal layer to laser light in the range of 350 to 650nm which is consistent with blue light, produces a patterned resist with improved resolution and decreased recording time (page 770, section 2 and page 771, section 4).

Response to Arguments

9. Applicant's arguments filed 5/8/2009 have been fully considered but they are not persuasive.

10. Applicant argues that Yamasaki does not teach multiple layers having light to heat conversion material in a single embodiment.

Yamasaki teaches the light to heat conversion material may be in any layer other than the image forming layer (page 26, [0282], page 28, [0318]). Yamasaki specifically teaches that the light to heat conversion material may be in any layer other than the image forming layer so that the light from the laser exposure can be converted to heat to form the image. Specific examples include the layer under the image forming layer and

the overcoat layer (page 26, [0282]). Although Yamasaki does not teach specifically having more than one light to heat converting layer, it would have been obvious to one of ordinary skill to have light to heat converting layers above and below the image forming layer to increase heat applied to the image forming layer.

11. Applicant argues that such multiple layers would not have been obvious because including multiple light to heat conversion layers in Yamasaki provides no benefit to the composition. Further, that the light to heat conversion material is not even required in the planographic precursor of Yamasaki and does not relate to creating patterns that require large amounts of heat.

Multiple light to heat converting layers would provide a benefit to the precursor of Yamasaki because more heat would be applied to the image forming layer, heat would be applied to the top and bottom of the image forming layer and thereby form an image faster than with only one light to heat converting layer. In addition, the light to heat conversion layer is required in Yamasaki (page 23, [0264]). That Yamasaki may not teach benefits of the light to heat converting material in forming large patterns is not of consequence. The light to heat converting material may be included in any layer other than the image forming layer and the composition may comprise more than one light to heat converting layer. Yamasaki specifically teaches, "at least one light to heat converting layer" to convert optical energy to heat energy (page 23, [0264]).

12. Applicant argues that Yamasaki does not teach a thermal protective layer distinct from the substrate and between the substrate and a light to heat conversion layer. Further, that examiner does not provide a citation for the thermal protective layer.

Yamasaki teaches undercoats, intermediates and thin film layers between the substrate and the substrate surface layer, which are representative of protecting layers (page 4, [0038]). Therefore, it would have been obvious to one of ordinary skill that undercoats, intermediates and thin film layers are representative of protective layers as claimed.

13. Applicant argues that Yamasaki does not teach the limitation of claim 15, wherein the non-patterned portion of the thermal sensitive layer is removed. Further, that the non-image area of the precursor in Yamasaki does not receive ink (the hydrophilic area is not removed) and is an integral part of the precursor that is inserted into the printer.

Yamasaki teaches positive and negative resist compositions. Although Yamasaki does not teach wet development, the precursor is placed in a developing machine wherein dampening water and ink are applied to the precursor. Therefore, the precursor is subjected to development in the printing machine. One of ordinary skill in the art would know that the dampening water is applied to the hydrophilic non-image area and the ink is applied to the hydrophobic area to form the image. The dampening water is removed from the precursor and the non-image area is therefore removed.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Connie P. Johnson/
Examiner, Art Unit 1795

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795